

DO UNSATURATED FATTY ACIDS HAVE BENEFICIAL EFFECT ON REDUCTION OF STROKE RISK IN HYPERTENSIVE POPULATION?

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BACKGROUND: It has been suggested that monospecific unsaturated fatty acids have potential effect on protection against stroke. Studies on the effect of different categories of fatty acids are lacking. The stroke incidence is high in hypertensive patients. Therefore, we studied the relationship between serum level of 6 categories of fatty acids and stroke incidence in hypertensive patients.

METHODS: 89 pairs including 100 men and 78 women matched by sex and age were recruited and analyzed in this study. We allowed age discrepancy within 5 years in each pair. All the patients aged from 34 to 85 years old were diagnosed with hypertension or had an average (mean of 3) blood pressure $\geq 140/90$ mm Hg. The fatty acids used for internal standard solution were obtained from Sigma, US. All the patient serum fatty acids were methylated before concentration determination. Each concentration determination was repeated twice and percent recovery was estimated. Univariate analysis was used to identify potential confounders in the relationship between serum levels unsaturated fatty acids and stroke incidence. Conditional logistic regression for matched pair data was used to adjust for potential confounders and classical risk factors for stroke.

RESULTS: Comparing participants with or without history of stroke, there were differences in educational level ($P=0.002$) and occupation ($P<0.001$). Participants without history of stroke had higher levels of total cholesterol ($P<0.001$), triglyceride ($P=0.041$), LDL ($P=0.048$) and HDL ($P=0.001$) compared with those with history of stroke. All the levels of 6 fatty acids were higher in participants without history of stroke compared with those with history of stroke ($P=0.017$ for palmitoleic acid, 0.001 for palmitic acid, <0.001 for linoleic acid, <0.001 for behenic acid, <0.001 for nervonic acid and 0.002 for lignoceric acid). Before adjustment, the stroke incidence was inversely associated with the levels of fatty acids except lignoceric acid ($P=0.160$). After adjustment for education and occupation, the levels of palmitoleic acid ($P=0.102$) and palmitic acid ($P=0.094$) were no longer inversely associated with the stroke incidence. After further adjustment for systolic blood pressure, smoking, drinking, total cholesterol and triglyceride, the inverse associations of linoleic acid (OR=0.965, 95% CI=0.942-0.990, $P=0.005$), behenic acid (OR=0.778, 95% CI=0.664-0.939, $P=0.009$), nervonic acid (OR=0.323, 95% CI=0.121-0.860, $P=0.024$) with stroke incidence were still highly significant.

CONCLUSION: In this cross-sectional study, the levels of all the fatty acids except lignoceric acid were inversely associated with the stroke incidence. Our results raise the possibility that unsaturated fatty acids may have beneficial effect on reduction of stroke risk in hypertensive population.